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(54) **SHEET MATERIAL DISPLAY PANEL**

LAMELLENFÖRMIGE ANZEIGEVORRICHTUNG

PANNEAU DE PRESENTATION EN MATERIAU LAMELLAIRE

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Description

[0001] This invention relates to improvements in displaying means and panels and means of cutting display means and panels therefor and more particularly, but not exclusively to a sheet-type material and cutting tool therefor.

[0002] To the present time, various types of display devices and panels have been commercially available but to varying degrees have suffered from the disadvantage of being heavy and cumbersome and difficult to store and transport. In particular, existing display devices and panels may be heavy and require backing to the sheet material or other inflexible substrate to maintain its rigidity. Furthermore, the frames necessary to house such displays and panels may themselves be heavy and expensive and accordingly difficult to transport and erect. In the case of display devices used in exhibitions and the like, the visual presentation is important and while certain display devices currently available meet certain expectations in the marketplace, the advantages referred to above, make them unwieldy and expensive.

[0003] US-A-4794712 describes a display panel having a first and second surface separated by spacer members to define generally parallel channels between the first and second surfaces. The panel is made from rigid multilayer corrugated fibreboard and is scored across the corrugations to enable the outer quarters to be folded inwards to enclose and protect material displayed in it during transport and storage.

[0004] According to this invention a panel having a first surface and a second surface, the first and second surfaces being separated by spacer members to define generally parallel channels between the first and second surfaces, is characterised in that at least one of the first and second surfaces includes a plurality of elongate cut-outs or slits extending along the entire length of and generally parallel to the channels and arranged to allow the panel to be rolled or deformably erected.

[0005] According to a second aspect of this invention a display means comprises a panel in accordance with the first aspect of this invention wherein an adhesive means is applied to any one of the first and second surfaces and thereafter a print or other image substrate is adhered to the said surface.

[0006] The present invention provides a simple and effective display means which is able to provide in use a substantially rigid surface to carry the necessary display, but which can be readily transported and stored.

[0007] According to a third aspect of the present invention a cutting tool for slitting or cutting slits or cutouts in a panel in accordance with the first aspect of this invention comprises a guide member engageable within at least one channel, and at least two blades spaced apart on said cutting tool, said blades positionable by said guide means to engage with and in use slit or cut the surface of said panel.

[0008] Further aspects of this invention, which should

be considered in all its novel aspects, will become apparent from the following description, given by way of example or possible embodiments thereof and in which reference is made to the accompanying drawings.

Figure 1: shows a cross-sectional end view of a display means according to one possible embodiment of the invention showing a single slit in each corrugation in only one surface of the display means.

Figure 2: shows a display means according to Figure 1 in the same cross-sectional end view wherein channels are cut into every second corrugation or flute in only one surface of the display means.

Figure 3: shows a display means according to Figure 1 in the same cross-sectional end view wherein channels are cut into every second corrugation or flute on both surfaces of the display medium.

Figure 4: shows a perspective view of the corrugated or fluted sheet materials.

Figure 5: shows a cross-sectional view of the display means wherein no channels have been cut having a print or image substrate mounted on the display side.

Figure 6: shows a cross-sectional view of the display means wherein channels are cut in every second corrugation or flute on both surfaces having a print or image substrate mounted on the display surface.

Figure 7: shows a side view of a possible embodiment of the cutting tool.

Figure 8: shows an end view of the cutting tool of Figure 7.

Figure 9: shows a side perspective view of a possible embodiment of the cutting tool in which six cutting blades are mounted in parallel.

[0009] The present invention relates to display means and a method of forming or otherwise cutting the display means which in one embodiment thereof is particularly suitable for use in sheet type display means for promotional and advertising purposes. However, it is to be appreciated that the present invention has applications wherever the varied and efficient direction of display materials is required whether for temporary or permanent purposes.

[0010] It will also be appreciated that the present invention is adapted for the display of a variety of types of display means. For the purposes of this specification, such means may be described as various types of sheet-like material which include photographic materials, laminated photographic materials, self-screen materials, off-set printed materials and other image substrates.

[0011] While reference is made to "sheet materials",

it will be appreciated that such materials may be retained in a substantially planar form or other embodiments formed into any possible shaped form, for example a tubular column. Such shaped forms may be achieved for example by means of a template allowing varied and efficient display purposes.

[0012] Likewise, the panel means of the present invention may comprise a deformable sheet material adapted for use in modelling, building or construction, for example, in creating shaped or contoured formations. Accordingly, the panels may be used as a die or mould, for example, in forming concrete or plastic structures or in a permanent structure of a desired shape.

[0013] Referring firstly to Figure 4, a corrugated or fluted sheet material is referenced by 1, which shows a plurality of corrugations or flutes 2, it is seen that such flutes run parallel one to the other. The sheet material comprises a continuous display surface 3 and a support surface 4. It will be appreciated that in the Figure 4 embodiment, the support surface is continuous rather than non-continuous as required in the invention. The sheet material has a layer of fastening means such as VELCRO (Trade Mark) 5 which is shown to be inserted in a channel in the support surface 4, so as to be flush with the said surface. Surface 4 may be used to secure the sheet material to either another sheet of material or like securement means. In this way, the sheet material may be maintained in a rigid state for display purposes.

[0014] Figure 1 shows a cross-sectional end view of the sheet material. Display surface 3 is to be shown to be substantially continuous while support surface 4 is shown to be non-continuous, having a plurality of cut-outs or slits 6. In the embodiment, each corrugation or flute has a cut or slit in the rear surface.

[0015] In the case of Figure 2, it is seen that the cuts or slits 6 are in every second corrugation or flute.

[0016] It will be appreciated that the Figure 1 and Figure 2 embodiments are simply two examples of how the support surface may be cut. It will be seen that a cut or slit may be placed in every third or fourth corrugation, or for that matter, whichever corrugation is required, whether those corrugations be on one or other or both surfaces.

[0017] In the case of Figure 3, it will be seen that the cuts or slits 6 are in every second corrugation or flute on both surfaces, the continuous sheet being maintained by alternating the cuts on either surface.

[0018] By making the aforesaid cuts or slits in either one or both surfaces, the surface tension of the surfaces is reduced. Accordingly, the sheet material 1 may be rolled in the direction of A in Figure 2 or in either direction in Figure 3.

[0019] The cut-outs or slits may range in the case of relatively small display mean from approximately 0.1 mm to 2 mm each. In the case of larger panels the slits may themselves be larger. The width of the cut-out or slit will vary depending on the degree to which the sheet material needs to be rolled. Obviously, if it is to be de-

sirable to roll the sheet material into a column for storage, the slits will need to be relatively wide. If on the other hand, it is only necessary for the sheet material to be rendered into an arcuate shape, then very narrow slits only will be required.

[0020] In the case of corrugated or fluted sheet material, indentations in both the rear support surface and display surface 7 occurs. This is shown in Figure 5. In the case of display materials, such as off-set printing paper, these materials will show up the said indentation. This results in an unsatisfactory appearance in the display material. To avoid this difficulty, an adhesive or carrier sheet coated on both sides with adhesive may for example be applied to the display surface 3 and thereafter a print 8 stuck to the display surface. It will be appreciated that the Figure 4 embodiment might be adapted for a variety of types of display mediums, such mediums including photographic materials, laminated photographic materials, self-screen materials, off-set printed materials and other image substrates.

[0021] Figure 6 shows the print or image substrate 8 covered by a layer of plastic laminate 9, adhering to a carrier sheet coated on both sides with adhesive 10, which in turn is applied to the display surface of the display means 3.

[0022] In order to place the cuts or slits 6 in the support surface, a cutting tool is required. Figures 7 and 8 show such a tool for cutting a single slit or cut. The cutting tool 9 has a handle 10, blade 11, adjustment means 12 and guide means 13.

[0023] Figure 9 is a side perspective view of a further possible embodiment of the cutting tool with three guide means 13. Each guide means can be seen to have two cutting blades 11a and 11b positioned either side, parallel to each other and rearwardly adjacent to guide means 13.

[0024] In this embodiment the handle is integrally formed with and positioned substantially perpendicular to the guide means 13. Blade means 11a and 11b attached to cutting tool 9 by way of nut and bolt as shown in Figures 7 and 8.

[0025] In use, the guide means 13 may be placed in any one flute or corrugation. The cutting tool may then be drawn towards the user. The two blades 11(a) and 11(b) would then cut a channel in the support surface of the display material. Any number of slits or channels could then be cut out of either or both of the surfaces of the display means.

[0026] It will be appreciated that a cutting tool 9 having a plurality of blade means may be provided. Figure 9 is a side perspective view of a cutting tool means with six blade means. Such cutting tools with multiple blades would allow a plurality of slits or cuts to be made simultaneously in the support surface of the display material, by placing the guide means 13 in the equivalent number of flutes or corrugations and drawing the cutting tool towards the user.

[0027] In a preferred method of operation, the corru-

gated or fluted sheet material may be placed horizontally on a table or vertically on a support, and the cutting tool 9 may then be applied to the upward facing surface of the sheet material.

[0028] When required, the blades 11 may be removed and replaced.

[0029] In the preferred embodiment according to Figures 7, 8 and 9 the cutting tool has behind the leading edge of the blades a curved or arcuate recess (14) such that when in use cut sheet material is caused to spiral up in the direction of arrow B. In this way clogging of the cutting tool is minimised. The cutting tool means may be used continuously and the cut material may be disposed of in any suitable way.

[0030] It will be appreciated that the cutting tool may be mechanised and be operated by any mechanised or automated machine, whereby blades are run across the sheet material to provide the necessary slits or channels.

[0031] It should also be appreciated that while the present invention has been described in various embodiments as modifying an existing corrugated or fluted sheet material, the invention is not restricted to this in any way.

[0032] It will be appreciated that corrugated or fluted material of the type described may be manufactured or formed from the outset with the preformed slits. In this case, the cutting of slits or channels might not be required.

[0033] Lastly, it should be appreciated that suitable sheet material may be formed by cutting corrugated or fluted sheet material in half along the line C of Figure 4. In this way, essentially two usable sheets of material will be provided. Such a process may be more complicated if cutting needs to take place, but if it is formed in the first place, then the process will be simplified.

[0034] Where in the foregoing description, reference has been made to specific components or integers of the invention having known equivalents, then such equivalents are herein incorporated as if individually set forth.

[0035] Although this invention has been described by way of example and with reference to possible embodiments thereof, it is to be understood that modifications or improvements may be made thereto without departing from the scope of the invention as defined in the appended claims.

Claims

1. A panel (1) having a first surface (3) and a second surface (4), the first and second surfaces (3,4) being separated by spacer members (7) to define generally parallel channels (2) between the first and second surfaces (3,4), characterised in that at least one of the first and second surfaces (3,4) includes a plurality of elongate cut-outs or slits (6) extending along the entire length of and generally parallel to the channels (2) and arranged to allow the panel (1) to be rolled or deformably erected.
2. A panel (1) according to claim 1, wherein the cut-outs or slits (6) are provided on both the first and second surfaces (3,4) of the said panel (1) such that the cut-outs or slits (6) are alternated on either surface.
3. A panel (1) according to claim 1 or 2, wherein the cut-outs or slits (6) have a width ranging from approximately 0.1mm to 2mm.
4. A panel (1) according to any one of the preceding claims, in which the width of the cut-outs or slits (6) are varied to control the degree to which the panel (1) may be rolled.
5. A display means comprising a panel (1) according to any one of the preceding claims, wherein an adhesive means is applied to any one of the first and second surfaces (3) and thereafter a print or other image substrate (8) is adhered to the said surface (3).
6. A display means according to claim 5, in which said adhesive means comprises a carrier sheet (10) coated on both sides with adhesive.
7. A display means according to claim 6, in which the print or image substrate (8) comprises a laminated material in which the grain of the said laminated material is substantially at right angles to the cut-outs or slits (6) in the panel (1).
8. A display means according to any one of claims 5 to 7, wherein a fastening means (5) is provided on the other of the first and second surfaces (4) to secure the display means to a rigid support.
9. A cutting tool (19) for slitting or cutting slits or cut-outs (6) in a panel (1) according to claims 1 to 4 comprising a guide member (13) engageable within at least one channel (2), and at least two blades (11a,11b) spaced apart on said cutting tool, said blades (11a,11b) positionable by said guide means (13) to engage with and in use slit or cut the surface of said panel (2).
10. A cutting tool (19) according to claim 9, having a plurality of pairs of cutting blades (11a,11b) positioned substantially parallel to each other and adapted to simultaneously form a plurality of cut-outs or slits (2).
11. A cutting tool (19) according to claim 9 or 10, wherein the said blades (11a, 11b) on each cutting tool are

positioned to allow variation in the size of the cut-outs or slits (6).

12. A cutting tool according to claim 9, 10 or 11, in which the angle of each blade means (11) can be varied. 5
13. A cutting tool (19) according to any of claims 9 to 12, in which each blade (11) includes a curved or arcuate portion. 10
14. A cutting tool (19) according to any one of claims 9 to 13, having a contoured material guide (14) which, in use, forces cut material to spiral up so that the cutting tool (19) does not become clogged by it. 15

Patentansprüche

1. Tafel (1) mit einer ersten Fläche (3) und einer zweiten Fläche (4), wobei die ersten und zweiten Flächen (3,4) durch Abstandhalterteile (7) derart voneinander getrennt sind, daß im wesentlichen parallele Kanäle (2) zwischen den ersten und zweiten Flächen (3,4) gebildet werden, dadurch gekennzeichnet, daß mindestens eine der ersten und zweiten Flächen (3,4) mehrere längliche Aussparungen oder Schlitz (6) aufweist, die entlang der gesamten Länge der Kanäle (2) und im wesentlichen parallel zu diesen verlaufen und derart angeordnet sind, daß die Tafel (1) gerollt oder unter Verformung aufgerichtet werden kann. 20 25 30
2. Tafel (1) nach Anspruch 1, bei der die Aussparungen oder Schlitz (6) derart an den ersten und den zweiten Flächen (3,4) der Tafel (1) vorgesehen sind, daß die Aussparungen oder Schlitz (6) an jeder Fläche alternieren. 35
3. Tafel (1) nach Anspruch 1 oder 2, bei der die Aussparungen oder Schlitz (6) eine Breite im Bereich von ungefähr 0,1 mm bis 2 mm haben. 40
4. Tafel (1) nach einem der vorhergehenden Ansprüche, bei der die Breite der Aussparungen oder Schlitz (6) variierbar ist, um den Grad zu steuern, bis zu dem die Tafel (1) gerollt werden kann. 45
5. Anzeigevorrichtung mit einer Tafel (1) nach einem der vorhergehenden Ansprüche, bei der auf eine der ersten und zweiten Flächen (3) ein Klebmittel aufgetragen ist und anschließend ein Aufdruck oder ein anderes Bildsubstrat (8) in Anhaftung an der Fläche (3) angebracht ist. 50
6. Anzeigevorrichtung nach Anspruch 5, bei der das Klebmittel eine beidseitig mit Kleber beschichtete Trägerbahn (10) aufweist. 55
7. Anzeigevorrichtung nach Anspruch 6, bei der der Aufdruck oder das Bildsubstrat (8) ein laminiertes Material aufweist, wobei der Strich des laminierten Materials im wesentlichen rechtwinklig zu den Aussparungen oder Schlitz (6) in der Tafel (1) verläuft.
8. Anzeigevorrichtung nach einem der Ansprüche 5 bis 7, bei der an der anderen der ersten und zweiten Flächen (4) eine Befestigungsvorrichtung (5) vorgesehen ist, um die Anzeigevorrichtung an einer starren Halterung zu befestigen.
9. Schneidwerkzeug (19) zum Schlitz (6) oder Schneiden von Schlitz (6) oder Aussparungen (6) in eine Tafel (1) nach einem der Ansprüche 1 bis 4, mit einer Führungsvorrichtung (13), die in mindestens einen Kanal (2) eingreifen kann, und mindestens zwei Klingen (11a,11b), die mit gegenseitigem Abstand an dem Schneidwerkzeug angeordnet sind, wobei die Klingen (11a,11b) mittels der Führungsvorrichtung (13) derart positionierbar sind, daß sie mit der Oberfläche der Tafel (2) zusammengreifen und bei Eetätigung die Oberfläche schlitz (6) oder schneiden. 15 20 25
10. Schneidwerkzeug (19) nach Anspruch 9, mit mehreren Paaren von Schneidklingen (11a,11b), die im wesentlichen parallel zueinander positioniert sind und in der Lage sind, gleichzeitig mehrere Schlitz (6) oder Aussparungen (6) zu bilden.
11. Schneidwerkzeug (19) nach Anspruch 9 oder 10, bei dem die Klingen (11a,11b) an jedem Schneidwerkzeug derart positioniert sind, daß die Größe der Aussparungen oder Schlitz (6) variiert werden kann.
12. Schneidwerkzeug (19) nach Anspruch 9, 10 oder 11, bei dem der Winkel jeder Klingenvrrichtung (11) variiert werden kann.
13. Schneidwerkzeug (19) nach einem der Ansprüche 9 bis 12, bei dem jede Klinge (11) einen gekrümmten oder bogenförmigen Abschnitt aufweist.
14. Schneidwerkzeug (19) nach einem der Ansprüche 9 bis 13, mit einer konturierten Materialführung (14), die bei Betrieb das weggeschnittene Material spiralförmig nach oben zwingt, damit dieses das Schneidwerkzeug nicht zusetzen kann. 50

Revendications

1. Panneau (1) ayant une première surface (3) et une seconde surface (4), la première et la seconde surface (3, 4) étant séparées par des organes d'entre-

- toise (7) pour la délimitation de canaux parallèles de façon générale (2) entre la première et la seconde surface (3, 4), caractérisé en ce que l'une au moins des première et seconde surfaces (3, 4) comprend plusieurs fentes ou découpes allongées (6) s'étendant sur toute la longueur des canaux (2) et en direction parallèle de façon générale à ceux-ci, et disposées afin qu'elles permettent un enroulement du panneau (1) ou son montage par déformation.
2. Panneau (1) selon la revendication 1, dans lequel les fentes ou découpes (6) sont disposées à la fois à la première et à la seconde surface (3, 4) du panneau (1) si bien que les fentes ou découpes (6) alternent sur l'une et l'autre surface.
 3. Panneau (1) selon la revendication 1 ou 2, dans lequel les fentes ou découpes (6) ont une largeur comprise entre environ 0,1 et 2 mm.
 4. Panneau (1) selon l'une quelconque des revendications précédentes, dans lequel la largeur des fentes ou découpes (6) varie afin que le degré d'enroulement du panneau (1) puisse être réglé.
 5. Dispositif d'affichage comprenant un panneau (1) selon l'une quelconque des revendications précédentes, dans lequel un dispositif adhésif est appliqué à l'une quelconque des première et seconde surfaces (3), puis un tirage ou un autre substrat d'image (8) est collé à ladite surface (3).
 6. Dispositif d'affichage selon la revendication 5, dans lequel le dispositif adhésif comporte une feuille de support (10) revêtue sur ses deux faces d'un adhésif.
 7. Dispositif d'affichage selon la revendication 6, dans lequel le tirage ou le substrat d'image (8) est formé d'un matériau stratifié dans lequel le grain du matériau stratifié est pratiquement perpendiculaire aux fentes ou découpes (6) formées dans le panneau (1).
 8. Dispositif d'affichage selon l'une quelconque des revendications 5 à 7, dans lequel un dispositif de fixation (5) est placé sur l'autre des première et seconde surfaces (4) pour la fixation du dispositif d'affichage à un support rigide.
 9. Outil de coupe (19) destiné à trancher ou couper des fentes ou découpes (6) dans un panneau (1) selon les revendications 1 à 4, comprenant un organe de guidage (13) destiné à être au contact d'au moins un canal (2), et au moins deux lames (11a, 11b) espacées sur l'outil de coupe, les lames (11a, 11b) pouvant être positionnées par le dispositif de guidage (13) afin qu'elles soient au contact de la surface du panneau (2) et, pendant l'utilisation, tranchent ou coupent cette surface.
 10. Outil de coupe (19) selon la revendication 9, ayant plusieurs paires de lames de coupe (11a, 11b) disposées en direction sensiblement parallèle mutuellement et destinées à former simultanément plusieurs découpes ou fentes (2).
 11. Outil de coupe (19) selon la revendication 9 ou 10, dans lequel les lames (11a, 11b) de chaque outil de coupe sont positionnées pour permettre une variation de la dimension des fentes ou découpes (6).
 12. Outil de coupe selon la revendication 9, 10 ou 11, dans lequel l'angle de chaque dispositif à lames (11) peut être modifié.
 13. Outil de coupe (19) selon l'une quelconque des revendications 9 à 12, dans lequel chaque lame (11) comporte une partie courbe ou courbée.
 14. Outil de coupe (19) selon l'une quelconque des revendications 9 à 13, ayant un guide profilé (14) de matériau qui, pendant l'utilisation, chasse le matériau coupé afin qu'il s'enroule en spirale et que l'outil de coupe (19) ne soit pas bouché par ce matériau.

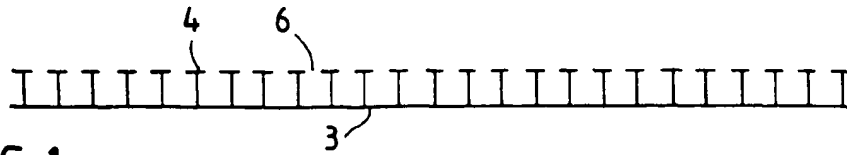


FIG. 1

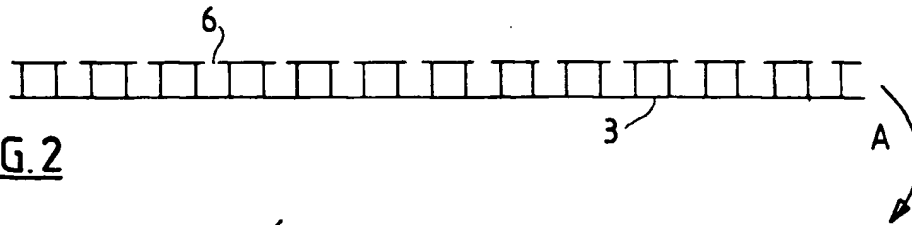


FIG. 2

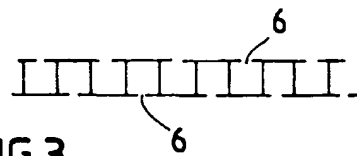


FIG. 3

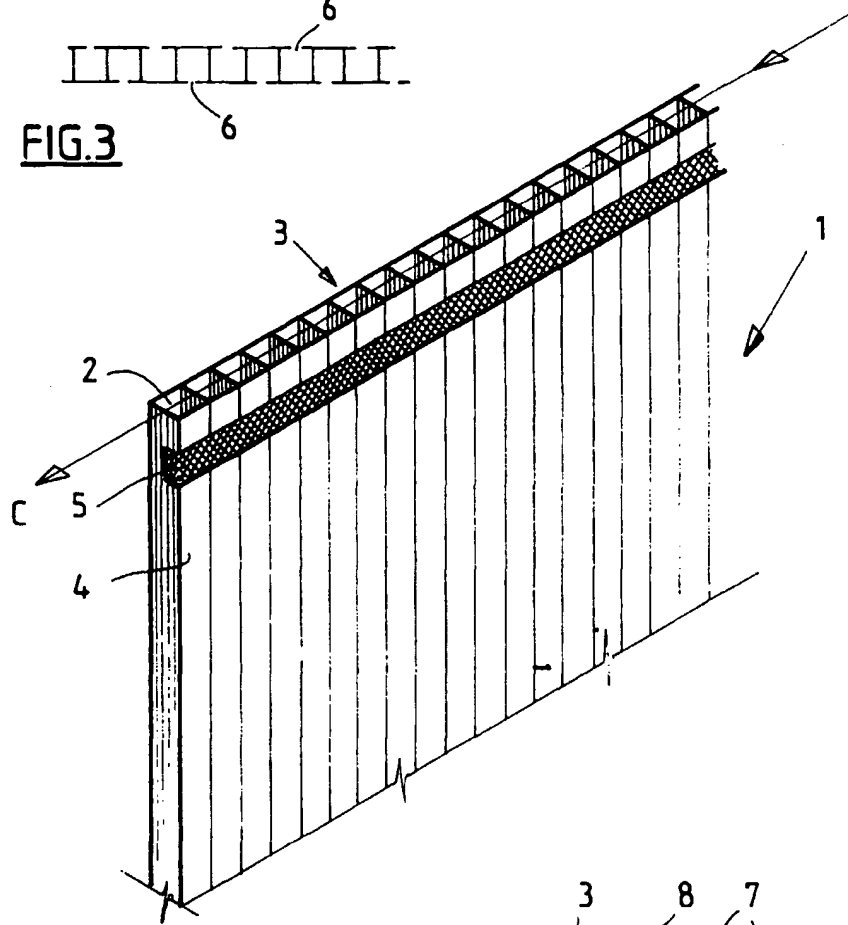


FIG. 4

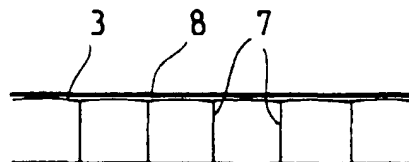


FIG. 5

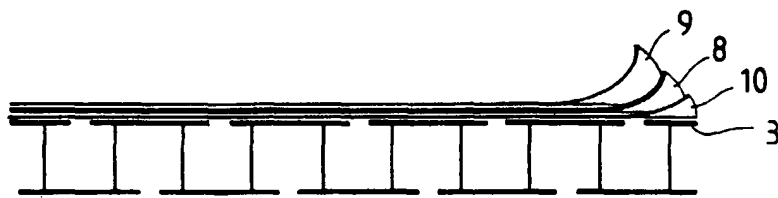


FIG. 6.

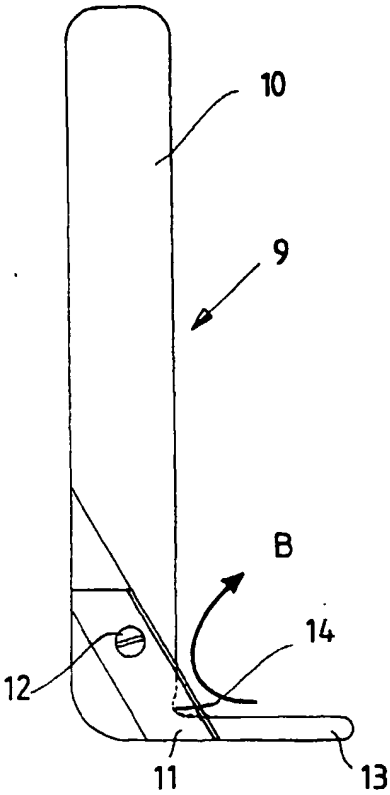


FIG. 7.

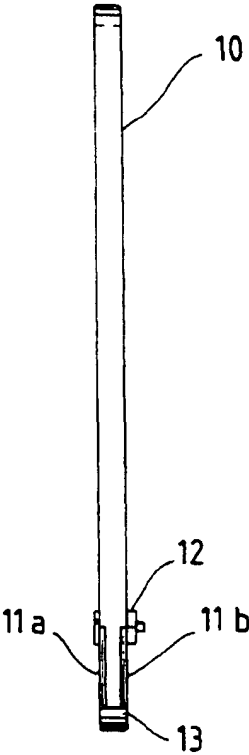


FIG. 8.

FIG.9

